

## **CHAPTER 2 – Alternatives**

### **Introduction**

Section 102 (2)(E) of the National Environmental Policy Act (NEPA) requires the Forest Service to study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. This chapter discusses tribal and public involvement, issues and other concerns with the proposed action, and how issues were addressed. In addition to the no action alternative, three action alternatives are described in detail including design features and monitoring associated with the alternatives.

The no action alternative (Alternative 1) is used as a baseline condition to help understand potential impacts that would be associated with implementation of the proposed action (Alternative 2) and the three action alternatives to the proposed action (Alternatives 3, 4 and 5). This chapter provides a comparison of these alternatives and how they address the purpose and need for action and potential issues, providing a clear comparison for the decision maker and the public.

Design features were developed to anticipate and reduce the effects from the proposed action on the environment and address and resolve the issues described in this chapter. Maps showing alternatives considered in detail are located in Appendix A. This chapter ends with a comparative synopsis of alternatives based on the environmental consequences disclosed in Chapter 3.

The scoping process required by the NEPA (40 CFR 1501.7) to have an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action was followed. The Kootenai National Forest invited participation from federal and state agencies, local Tribes, environmental groups and individuals interested in, or affected by, the proposed action.

The Interdisciplinary Team (IDT) developed the proposed action in response to the project purpose and need, Forest Plan objectives, goals and standards, and public and agency concerns as directed by NEPA. The IDT consisted of Forest Service personnel who have expertise in different natural resource fields in order to provide a diverse, interdisciplinary approach to the project. The final proposed action was developed and refined through a series of resource evaluations, field visits, IDT meetings, and public interactions, and was crafted specifically to avoid adverse impacts to the environment.

As the Cabinet District prepared to release the Environmental Assessment (EA) for this project, the decision was made by Forest Supervisor to transition to a more detailed Environmental Impact Statement (EIS). This decision was in response to an array of emerging potential issues, changed conditions, and the expanded scope of the project in response to increasing mountain pine beetle activity in the lodgepole pine.

## **Public Involvement**

A public information meeting was held on October 9, 2009 to provide information regarding areas of interest where timber harvest and/or prescribed burning may occur. Attendees expressed concerns about the potential for wildfire and insect and disease infestations, road access, and asked questions about the use of prescribed fire for fuel reduction and wildlife habitat enhancement.

The proposed action was listed on the Kootenai National Forest's quarterly schedule of proposed actions (SOPA) beginning with the January 2010 issue. A detailed scoping letter explaining the proposed action was mailed out February 24, 2010. Recipients included other federal agencies, State and county agencies, local Tribes (see below, also), and approximately 70 local land owners, watershed council members, and other interested parties. An additional opportunity to provide input occurred in May, 2011 regarding the creation of openings greater than 40 acres in size and the potential need to amend the Forest Plan to exceed open road density standards on big game summer range.

Additionally, site-specific public comments on the Pilgrim Creek proposed action were requested again in March 2012 through publication in the *Federal Register* (March 23, 2012). The decision to move from an Environmental Assessment to an Environmental Impact Statement was made by Forest Supervisor Paul Bradford, the responsible official for this project. A letter was mailed to interested individuals, agencies and groups explaining the rationale for the change.

## **Tribal Involvement**

The Forest Service, through the Secretary of Agriculture, is vested with statutory authority and responsibility for managing resources of the National Forests. No sharing of administrative or management decision-making power is held with any other entity. However, commensurate with the authority and responsibility to manage is the obligation to consult, cooperate, and coordinate with Indian Tribes in developing and planning management decisions regarding resources on National Forest System land that may affect tribal rights.

The project area lies within the area ceded to the United States government by the Confederated Salish and Kootenai Indians as a result of the Hellgate Treaty of 1855. Tribes were contacted during the scoping phase of the Pilgrim project. Elements of respective Indian cultures, such as tribal welfare, land, and resources were entrusted to the United States government as a result of this treaty. The treaty dictates, in part, that the United States government facilitate the execution of treaty rights and traditional cultural practices of the tribes by working with them on a government-to-government basis in a manner that attempts a reasonable accommodation of their needs, without compromising the legal positions of the respective tribes or the federal government.

Although the Hellgate Treaty does not specifically mandate the federal government to manage habitats, there is an implied assumption that an adequate reserve of water and lands be available for executing treaty-related hunting and fishing, and cultural activities. Because tribal trust activities often occur in common with the public, the Kootenai National Forest strives to

manage tribal ceded land to enable the execution of tribal rights, as far as practicable, while still providing goods and services to all people.

Input from tribal contacts did not include any specific concerns about the proposed action, or the action alternatives. However, there will be continued consultation with the tribes, and monitoring of potential effects if an action alternative is ultimately selected by the deciding official.

## **Summary of Scoping Results**

At completion of the scoping period, we received input on the proposed action from eleven individuals, groups, and agencies. Comments covered an array of topics including wildlife habitat, road maintenance, the amount of area proposed for prescribed fire use only relative to timber harvest, support for prescribed burning, and suggestions for monitoring, open road densities, roadless areas, and utilization of biomass, among others.

One commenter suggested that an alternative be developed that fully meets road density standards and does not build any new road. This comment played a role in the development of Alternative 4 and 5 which propose no new permanent or temporary roads.

Input from the public was again sought (May 2011) after scoping of the proposed action, regarding openings over 40 acres in size and the MA-12 Forest Plan amendment which have been identified as components of the proposed action. This letter also included an update on how the Forest Service was considering scoping comments in the development of alternative courses of action.

## **Issue Resolution**

One federal agency, seven individuals, and three organized groups submitted questions seeking clarification, suggested specific analyses, or raised concerns during the scoping process about potential environmental effects of the proposed action. Based on public input, the ID team recommended and the Responsible Official approved the issue topics listed below for detailed study. Each topic is briefly described in this section along with units of measure (indicators) used in the analysis process for each issue.

## **Significant Issues**

Significant issues describe a dispute or present an unresolved conflict associated with potential environmental effects of the proposed action. Based on public input the IDT recommended and the Responsible Official approved the significant issues listed below for detailed study. Each significant issue described below includes a narrative statement with criteria or methods to measure change (effects).

### **Road Construction**

Comments were received which expressed concern regarding construction of new permanent and temporary roads, and an array of issues they view as related to roads. In response, the District Ranger instructed the ID Team to develop an alternative to address the purpose and need for the project without construction of new roads. Alternatives 4 and 5 were both designed to address the purpose and need for the project without construction of new roads.

Indicator and Unit of Measure:

- New permanent or temporary road construction as measured in linear feet.

### **Open Road Density on Big Game Summer Range**

One commenter felt that an alternative could be developed that fully meets Forest Plan road density standards. As a result of decisions made during past project planning, the Pilgrim Planning Subunit is divided into two open road density areas (Figure 3-4). The Stevens Ridge Amendment Area includes the area bounded on the south by Marten Creek and on the north by Pilgrim Creek. This area is managed under a programmatic Forest Plan Amendment for open road densities which increases ORD standard to 1.46 miles per square mile when there are no active sales or 2.0 miles per square mile during sale activity. Outside of the Stevens Ridge Amendment Area, the Forest Plan Standard of 0.75 is in effect. While Alternative 4 does not construct any new road it does reopen roads that are currently closed and in so doing, it increases open road density in MA-12. Alternative 5 was designed to use only existing open roads to evaluate an alternative that does not increase open road density in MA-12.

Indicator and Unit of Measure:

- Open road density (mi. /mi<sup>2</sup>) in MA12 outside of the Stevens Ridge amendment area.

### **Expanding Infestation of Mountain Pine Beetles**

Mountain pine beetles have become much more active in the project area since the proposed action was originally developed. This local outbreak coincides with a larger, better known outbreak elsewhere in Montana. Given the existence in the project area of lodgepole pine stands, which are the primary target of mountain pine beetles, and observed increases in beetle attacks and related mortality, there is some concern that the proposed action does not include enough treatment to address the current increasing mortality in the lodgepole pine from mountain pine beetles. In response to these comments, the District Ranger instructed the ID Team to develop an alternative that more specifically addresses the current, ongoing outbreak of mountain pine beetles in the project area to capture economic value and return the affected areas to productive timber growth.

Indicator and Unit of Measure:

- Lodgepole pine dominated stands harvested and regenerated, measured in acres.

### **Openings over 40 acres in size**

The National Forest Management Act of 1976 [USC 1604 (g) (3) (F) (IV)], establishes opening size limits according to geographic areas, forest types, or other suitable classifications. Regulations establish the size limit for our geographic area at 40 acres, with exceptions for larger openings when they will produce a more desirable combination of net public benefits.

Forest Service policy (FSM 2471) states that the size of harvest openings created by even-aged silviculture in the Northern Region will be normally 40 acres or less. Creation of larger openings will require 60-day public review and Regional Forester approval, with the following exception that is applicable to this project:

- Where natural catastrophic events such as fire, windstorms, or insect and disease attacks have occurred, 40 acres may be exceeded without 60-day public review and Regional Forester approval, provided the public is notified and the environmental analysis supports the decision.

The proposed action and alternatives 3 and 4 include proposed treatment units that would be over 40 acres in size, either based on the actual size of the proposed unit, or in combination with adjacent, existing openings. Some of these proposed openings would be exempted under the NFMA's exception for catastrophic events, in this case mountain pine beetle related mortality in lodge pole pine stands. Other openings would require Regional Forester review and approval for openings exceeding 40 acres.

The actions and subsequent management strategy proposed for these units fall under the requirement to limit opening size, as described by Section 6 of the National Forest Management Act (NFMA), and require Regional Forester approval (16 USC 1604 (g) (3) (F) (iv), and FSM (Forest Service Manual) 2471.1.

## **ALTERNATIVE DEVELOPMENT PROCESS**

Based on public input, the ID team developed three action alternatives in addition to the required no action alternative and the proposed action. The issues described above were used to drive the development of alternatives to the proposed action.

Two general approaches were developed to treat stands in the Pilgrim Creek project area. Intermediate harvest is used to increase growing space between trees; improving growing conditions and tree vigor. Regeneration harvest followed by planting with root disease-resistant species removes more susceptible species and trends the stand towards a long-term condition where root disease plays a lesser role in within-stand dynamics. Regeneration harvest is also used to manage for early successional species such as lodgepole pine.

The original proposed action scoped in 2010 was developed based on preliminary assessments of stand conditions. In most areas, silvicultural prescriptions were designed to meet the purpose and need emphasizing intermediate harvest. Regeneration harvest was concentrated in specific

areas with higher levels of root disease and in areas where lodgepole pine was the dominant species.

Further evaluation of stands proposed for harvest identified higher levels of root disease than expected. There was concern that intermediate timber harvest in disease-susceptible stands could exacerbate the effects of root disease and/or promote its spread. As a result, alternatives to the proposed action all proposed more regeneration harvest followed by planting with root disease resistant species such as larch, ponderosa pine, and white pine. This type of approach was used in alternatives 3, 4, and 5.

Additionally, during this time, lodgepole pine mortality due to mountain pine beetle activity began to increase. Most lodgepole pine stands in the area originated following the 1910 fires and are now particularly susceptible to insect and disease attack. The IDT recognized this and had crafted a purpose and need statement that addressed increasing age class diversity in lodgepole pine stands. Alternative 3 was developed with the intention of capturing some of the economic value in the dead and dying lodgepole pine while reforesting those areas naturally with lodgepole pine. This approach required building new roads in areas where lodgepole forest types are found, and resulted in larger units due to the nature of lodgepole occurrence in the area.

Alternative 4 was developed to evaluate an alternative that did not build any new road. This alternative emphasized treatment of lodgepole pine being affected by mountain pine beetle and many of the same units in Alternative 3 that could be accessed from existing roads.

Alternative 5 was designed to address the same concerns as Alternative 4 with modifications to keep regeneration units below 40 acres and meet all Forest Plan standards for open road density. This alternative would not require any site-specific Forest Plan amendments.

## **Alternatives Considered but Eliminated from Detailed Study**

### **Restore the Pilgrim Creek Planning Area using Prescribed Fire Only**

The IDT identified this internal issue and determined that the “burn only” option for treatment is limited in usefulness. Densely stocked stands of Douglas-fir and other conifers are prone to crown fire when they burn. Crown fires were common in this area historically, but were limited by breaks in stand structure. With the current condition of contiguous closed canopies in even-aged stands, crown fires have the potential to intensely burn large areas. This is not desirable to most of the public or land managers. Reductions in fuel loading and tree density could not be accomplished without severe fire behavior, soil impacts, and the loss of economically valuable timber. A “burn only” treatment would not move mid-successional stands in the Pilgrim Creek project area toward the desired condition.

In the absence of a timber sale, the availability of funds to accomplish rehabilitation projects or large-scale prescribed burning would be entirely dependent on appropriated funds, which are not presently assured.

Because of these factors, this alternative was not analyzed in further detail in this DEIS.

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## ALTERNATIVES CONSIDERED IN DETAIL

### Alternative 1 - No Action

#### Purpose and design:

- Alternative 1 provides a comparison between taking action and not taking action and represents a viable alternative for the line officer to choose.
- Responds to the requirement to consider a no action alternative and serves as a baseline to compare effects.

#### Description:

This alternative does not propose timber harvest, activity fuels management, prescribed fire use to stimulate forage production, road construction and reconstruction or any other actions associated with the proposed action. The no action alternative provides a baseline for comparison of environmental consequences of the other alternatives to the existing condition (36 CFR 1502.14). Under this alternative, management actions in the project area would be limited to the ongoing and reasonably foreseeable actions listed in Chapter 3, representing a *status quo* strategy. This includes wildfire suppression, road maintenance, routine BMP work, noxious weed treatment, trail maintenance, special uses, public use on NFS lands, and actions on privately owned lands.

In this document the No-Action alternative means that all activities identified in the proposed action would not be approved, or occur in the project area. Harvest of trees and tree planting in harvested units would not be authorized. Forest stands with root diseases or insect infestations would not be managed to minimize the impacts of these damaging agents. There would be no construction of temporary roads or use of previously closed and decommissioned roads in support of timber harvest.

There would be no project activities requiring monitoring in this alternative, but the area would continue to be monitored for resource conditions according to the Forest Monitoring Plan. Previously approved (ongoing) activities such as fire protection, monitoring, and road maintenance would continue as authorized and would proceed.

### Alternative 2 - Proposed Action

#### Purpose and Design:

- Alternative 2 was designed to respond to the agency's purpose and need for action, and is the proposed action first scoped.
- Harvests timber to meet specific stand-level and landscape objectives.
- Amends the Forest Plan for MA12 to allow exceeding open road density standards during project implementation in the project area.
- Includes a site-specific Forest Plan amendment to allow some reduction in cavity habitat on 15 acres of MA 10 in one unit, to allow for incidental loss of snags due to concern about forest worker safety.

**Description:**

The actions proposed would utilize timber harvest to reduce timber stand stocking, increase representation of more resilient and root disease-resistant tree species, improve age class diversity of lodgepole pine stands, and improve future growth, yield and vigor of the treated stands. Timber harvest would produce wood products, including saw timber, pulp logs and other biomass (small trees, tops, and limbs), which all may be removed from the site. Other treatment areas would not include harvest or removal of timber, but rather focus on increasing the quality and quantity of big game forage through the use of prescribed burning. To meet resource objectives for burning, some areas would require slashing of some smaller material to facilitate use of prescribed fire. Details of the proposed action are described below (See Table 2-1), and displayed in map format in Appendix A of the DEIS.

**Table 2-1. Activity Summary for Alternative 2**

<b>SUMMARY TABLE ALTERNATIVE 2</b>	
<b>Silvicultural Treatments</b>	
Intermediate Harvest (commercial thinning)	796 acres
Intermediate Harvest (aspen enhancement)	28 acres
Regeneration Harvest	587 acres
- Seed Tree (292 acres)	
- Shelterwood (295 acres)	
<b>Total Harvest</b>	<b>1,411 acres</b>
<b>Required Planting</b>	<b>311 acres</b>
<b>Natural Regeneration</b>	<b>276 acres</b>
<b>Species Diversity Planting</b>	<b>Up to 211 Acres</b>
<b>Logging Systems</b>	
Tractor	431 acres
Skyline	980 acres
<b>Fuels Treatments- Activity and Natural Fuels</b>	<b>5,975 acres</b>
Activity Fuel Treatments	
Underburning of activity fuels	427 acres
Broadcast burning of activity fuels	207 acres
Machine piling of activity fuels	370 acres
Lop and Scatter activity fuels (no burn)	407 acres
Natural Fuels Reduction Activities	
Ecosystem Burning	4,564 acres
(3,252 acres included in IRAs)	
<b>Harvest Related Road Work</b>	
Road Reconstruction/BMP Implementation	47 miles
New Road Construction	2.4 miles
Temporary road Construction	1.6 miles

To accomplish desired conditions, the following treatment methods are proposed:

### **Mechanical Removal of Sawtimber**

Timber harvest would occur on approximately 1,411 acres. Treatment types include commercial thinning (796 acres in 18 harvest units), and both seed tree and shelterwood treatments totaling 587 acres in 20 harvest units.

### **Commercial Thinning**

Approximately 796 acres in 18 harvest units (Units 2, 3, 5, 6, 13, 16, 19, 24, 25, 26, 28, 29, 34, 35, 36, 37, 39, and 41) would be thinned to increase the distance between dominant tree crowns, thereby reducing the overall stocking level within the targeted stands. Unit 34 is adjacent to private land and thinning here would be designed to increase the distance between tree crowns to reduce the chance of crown fire spreading in the event of a wild fire.

Approximately 287 acres would be thinned using ground-based equipment (tractor). Slash generated from harvesting on these acres would be excavator piled and the piles burned after treatment.

Approximately 509 acres would be harvested using skyline systems (cable) to yard trees to a landing. Generally, slash would be treated by yarding tree tops to the landing and then lopping and scattering residual slash and damaged residual understory trees to reduce the height of the fuel bed. On approximately 94 acres, commercial thinning would be followed by underburning where residual trees can survive a light ground fire (Units 19, 25, and 34).

### **Intermediate Harvest – Aspen Enhancement**

Unit 1 is a 28 acre unit with a substantial aspen component whose growth and survival is being reduced by conifer ingrowth. Quaking aspen is a relatively uncommon species on many sites in the area and is considered a high value species for many wildlife species. Treatment in this unit would generally thin conifers from around larger aspen while leaving most aspen intact. Some small openings would be created that would allow some suckering of aspen shoots, though in general the treatment would be designed to maintain the larger aspen on the site.

### **Regeneration Harvest and Reforestation**

Approximately 587 acres, in 20 harvest units (Units 4, 8, 9, 10, 11, 12, 14, 15, 17, 18, 20, 21, 23, 27, 30, 31, 32, 33, 38, and 40) would be regenerated.

Several units (Units 8, 9, 10, 11, 12, 13, 14, 15, 17, 23, 30, and 31) would harvest lodgepole pine that is experiencing significant mortality due to mountain pine beetle activity. Lodgepole pine would be the primary species removed. Natural regeneration of lodgepole pine would be the primary means of reforestation, though some units may be planted with western larch or western white pine for species diversity.

### **Seed tree with Reserves**

Units 10, 11, 12, 14, 17, 20, 21, 23, 27, 30, 31, and 32 would receive a seed tree with reserves prescription consisting of at least 10 desirable trees per acre, and contain on average less than 30 square feet of basal area per acre of canopy dominant or co-dominate sized trees.

### **Shelterwood with Reserves**

Units 4, 8, 9, 15, 18, 33, 38, and 40 would be treated with shelterwood with reserve treatments. This is proposed where there are enough trees of desirable size or species in good health and vigor to contribute as a viable seed source or meet other resource values such as aesthetics, hydrology, and wildlife. More than 10 trees per acre would be retained, averaging greater than 40 square feet of basal area throughout the stand. These units may have a clumpy distribution because groups of trees rather than solitary trees would be left scattered throughout the stands. Trees of other species will be harvested that have signs of insect and disease. Favored species to leave are western larch and ponderosa pine, and larger healthy Douglas-fir and western white pine. Reserves would be of larger diameter trees that are an important structural component in existing stands and may function as important wildlife habitat, future snags, and coarse woody debris. Reserve trees are desirable for the duration of new stand development.

### **Reforestation/ Planting**

After completion of timber harvest and slash/fuel treatments, the above regenerated stands would generally be planted with site-appropriate, tree seedlings. These species include fire, disease, and insect-resistant species suited to the site; such as larch, ponderosa pine, and western white pine. Planting of these species would help increase diversity and the long-term resilience of the initiating forest stands. Units 8, 9, 10, 11, 12, 14, 15, 17, 23, 30, 31 would rely primarily on natural regeneration of lodgepole pine for reforestation, though some areas would be planted with approximately 200 western larch and/or western white pine per acre for species diversity.

### **Openings Greater than 40 acres**

Of the 587 acres of regeneration harvest, eight openings over 40 acres in size will be created. Openings are initiated several ways. One way is the regeneration harvest unit alone is greater than 40 acres, another is for regeneration harvest units within 600 feet of each other to combine to greater than 40 acres, and a third way is the regeneration harvest is within 600 feet of an existing opening that when combined are greater than 40 acres. Four harvest units are greater than 40 acres individually. The remaining 4 openings greater than 40 acres result by their juxtaposition to each other or existing openings. Openings are such: 45 acres, 43 acres, 129 acres, 68 acres, 54 acres, 40 acres, 48 acres, and 93 acres for a total of 548 acres that will be considered openings in regard to wildlife values (Table 2-2).

**Table 2-2. Over 40 Acre Openings in the Proposed Action**

Unit	Proposed Treatment	Acres	Cumulative Opening Size	Rationale for large openings	Requires Regional Forester Approval
4 Existing opening(s)	Shelterwood w/ Reserves None	24 19	43	Heavy root rot adjacent to existing opening.	NO
8  9 Existing opening(s)	Shelterwood w/ Reserves  Shelterwood w/ Reserves None	32  13 9	54	Mortality in lodgepole pine due to mountain pine beetle	NO
10	Seedtree w/ Reserves	43	43	Mortality in lodgepole pine due to mountain pine beetle	NO
14  15  Existing Opening(s)	Seedtree w/ Reserves Shelterwood w/ Reserves  None	17 41  32	139	Mortality in lodgepole pine due to mountain pine beetle, root disease.	YES
17 18	Seedtree w/ Reserves Shelterwood w/ Reserves	19 30	139		
20 21 Existing Opening	Seedtree w/ Reserves Seedtree w/ Reserves None	32 28 11	71	Heavy root rot adjacent to existing opening.	YES
31  32 Existing opening	Seedtree w/ Reserves  Seedtree w/ Reserves None	30  10 10	50	Mortality in lodgepole pine due to mountain pine beetle	NO
33  Existing Opening	Shelterwood w/ Reserves	43  6	49	Fuel reduction near private land.	NO
38 40 Existing openings	Shelterwood w/ Reserves Shelterwood w/ Reserves None	19 93 24	136	Root disease, visuals	NO

Table 2-3. Alternative 2 Unit Treatment Summary

Unit	Acres	Treatment	Logging System	Slash Treatment	Regeneration Method (if applicable)
1	28	Aspen enhancement	Tractor	YT/S/GP/JB	N/A
2	68	CT	Tractor	YT/FDR/GP/JB	N/A
3	87	CT	Tractor	YT/FDR/GP/JB	N/A
4	24	SW	Skyline	YT/FDR/L+S (No Burn)	Plant
5	41	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
6	12	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
8	32	SW	Skyline	YT/FDR/L+S (No Burn)	Natural
9	13	SW	Skyline	YT/FDR/L+S (No Burn)	Natural
10	43	ST	Skyline	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity
11	30	ST	Skyline	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity
12	31	ST	Skyline	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity
13	19	CT	Tractor	YT/FDR/GP/JB	N/A
14	17	ST	Tractor	YT/FDR/GP/JB	Natural, plant WP/WL for spp. Diversity
15	41	SW	Tractor	YT/FDR/UB	Natural, plant WP/WL for spp. Diversity
16	20	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
17	19	ST	Tractor	YT/FDR/UB	Natural, plant WP/WL for spp. Diversity
18	30	SW	Skyline	YT/FDR/UB	Plant
19	32	CT	Skyline	YT/FDR/UB	N/A
20	32	ST	Skyline	YT/FDR/BB	Plant

<b>Unit</b>	<b>Acres</b>	<b>Treatment</b>	<b>Logging System</b>	<b>Slash Treatment</b>	<b>Regeneration Method (if applicable)</b>
21	28	ST	Skyline	YT/FDR/BB	Plant
23	11	ST	Tractor	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity
24	21	CT	Skyline	YT/FDR/UB	N/A
25	33	CT	Skyline	YT/FDR/UB	N/A
26	56	CT	Skyline	YT/FDR/UB	N/A
27	32	ST	Skyline	YT/FDR/BB	Plant
28	32	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
29	11	CT	Tractor	YT/FDR/GP/JB	N/A
30	9	ST	Tractor	YT/FDR/GP/JB	Natural
31	30	ST	Skyline	YT/FDR/GP/JB	Natural
32	10	ST	Skyline	YT/FDR/GP/JB	Plant
33	43	SW	Skyline	YT/FDR/UB	Plant
34	29	CT	Skyline	TNS/YT/FDR/FAS/UB	N/A
35	27	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
36	82	CT	Tractor	YT/FDR/GP/JB	N/A
37	171	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
38	19	SW	Tractor	YT/FDR/GP/JB	Plant
39	20	CT	Tractor	YT/FDR/GP/JB	N/A
40	93	SW	Skyline	YT/FDR/UB	Plant
41	35	CT	Skyline	YT/FDR/L+S (No Burn)	N/A

**Slash Treatment Key:**

**BB= Broadcast Burn**

**FDR= Fall Damaged Residuals (understory)**

**GP= Grapple Pile, burn piles**

**JB= Jackpot Burn**

**L+S= Lop and Scatter**

**LT= Leave Tops**

**UB= Underburn**

**YT= Yard Tops to landing**

## Existing Road Treatments

Existing roads would be maintained and improved and brought up to current BMP standards. Approximately 5.2 miles of closed road would be reopened and used for this project. These roads include NFSRs 2718, 2719, 2744C, 2744D, 2746, and 2214H. All other existing roads to be used for this project are currently open either yearlong or seasonally.

## **Proposed Road Construction**

An additional 2.4 miles of new permanent road and approximately 1.6 miles of temporary road would be needed for harvest access and would be stabilized upon completion of harvest activities.

Proposed new roads would be restricted to administrative use only during sale-related activities and access would be controlled by a gate or other closure mechanism.

Proposed temporary roads would also be restricted to administrative use only during sale-related activities, and following completion of the sale would be returned to near natural contours, re-vegetated, and made effectively impassable to motorized vehicles.

## **MA 12 Forest Plan Amendment**

This alternative would include a project-specific, non-significant Forest Plan amendment to allow an increase in open road density on big game summer range (MA 12) outside of the Stevens Ridge Amendment Area- roughly the north half of the Pilgrim Project Area. Alternative 2 would result in a maximum ORD of 2.3 mi/mi<sup>2</sup> during operations, and ORD would drop back to the current 1.9 mi/mi<sup>2</sup> post-project.

## **MA 10 Forest Plan Amendment**

This alternative would require a project-specific, non-significant Forest Plan amendment to allow a reduction in cavity habitat associated with snag removal. Unit 40 proposes treatment in approximately 15 acres of MA 10.

## **Alternative 3**

**Alternative 3 is the preferred alternative.**

### **Purpose and Design:**

- Alternative 3 was designed to respond to the agency's purpose and need for action;
- Harvests timber to meet specific stand-level and landscape objectives.
- Addresses concerns related to how to economically address the growing impacts of mountain pine beetles on lodgepole pine communities
- Proposes regeneration harvest in some areas where root disease levels were found to be higher than desired when considering intermediate harvest.
- Includes a Forest Plan amendment to allow greater road density in MA 12.

**Description:**

Alternative 3 was developed to respond to internal issues regarding the economic feasibility of implementing the proposed action and the increased lodgepole pine mortality occurring due to mountain pine beetle activity in the project area and is the agency's preferred alternative. Mountain pine beetle activity increased notably between the 2009 and 2010 seasons, and a field review in 2010 indicated that beetle attacks increased five-fold in 2010 compared to 2009. Substantial mortality was observed in affected stands, and a focus on capturing the economic value in the affected stands and reforesting them quickly resulted in the inclusion of additional areas for treatment. The most heavily affected stands were located in the upper Pilgrim Creek area and proposed timber harvest would result in several openings exceeding 40 acres in size, for which Regional Forester approval is required. Additionally, new road would be needed to access portions of the affected area. Approximately 4.7 miles of new permanent road would be constructed, about three miles of which would be built specifically to access lodgepole pine stands with ongoing mountain pine beetle activity. Approximately 1.1 miles of temporary road would be needed for this alternative, about one half mile of which would access lodgepole pine stands.

Another internal concern which shaped formulation of this alternative was the discovery of higher than expected levels of root disease in some units proposed for commercial thinning. There was a concern that intermediate harvest could exacerbate the effects of root disease in susceptible stands and not trend species composition toward the desired condition. Several units where root disease is active at moderate to high levels were changed to regeneration harvest types in this alternative. Specifically, Units 25, 37, 39, and 40 would be regenerated under this alternative.

A number of units, primarily in upper Pilgrim Creek, were increased in size as a result of recently discovered increases in mountain pine beetle activity. Specifically:

Unit 10 increased in size from 43 acres to 155 acres (Units 10T, 10S, and 10B). Field reconnaissance found high levels of mountain pine beetle activity and unit boundaries were adjusted accordingly. New road construction would be required to access Units 10T and 10B.

Unit 11 and the temporary road that would access it were dropped and replaced by Unit 11B. The same road that access Units 10T and 10B would access Unit 11B.

Unit 12 was re-delineated to encompass the boundaries of Units 13, 14, 15, and 17 as displayed in Alternative 2, and its eastern boundary moved farther downhill to include more affected lodgepole pine. The original acreage of these units was 125 acres. Units 12, 12S, and 12B as proposed in Alternative 3 now encompass 256 acres.

Units 20 and 21 were dropped due to higher priority treatment areas in the vicinity and a desire to protect stream conditions by limiting water yield increases.

Other unit changes between the proposed action and Alternative 3 were made for economic reasons, i.e. low volumes, road construction cost, etc. Some of these changes include:

Unit 33 was dropped due to road construction costs, low volume per acre, and feedback from our fuels specialist that treatment of this unit would not markedly alter fire behavior or increase protection of private property adjacent to the unit.

Unit 34 was increased in size based on the ability to treat a wider swath adjacent to private property to increase the effectiveness of fuel treatments in this unit.

Unit 35 was moved below the road and increased in size from 27 to 56 acres. The new unit would only require a short, temporary road to access one end of the unit, and a large percentage could be logged from the existing road. This change resulted in foregoing approximately 0.7 miles of new, permanent road that would have been required to access the original location of this unit. This unit change was made to improve the economics of the project.

Unit 36 was decreased in size from 82 to 34 acres in Alternative 3. The road that would have been required to access the bottom of this unit, the same road required to access Unit 35, was dropped.

Unit 37 decreased in size and the prescription was changed in Alternative 3. Originally proposed to be thinned, concerns over exacerbating root rot in Douglas-fir resulted in changing the proposed treatment to a shelterwood with reserves. The unit decreased from 171 acres to 34 in Alternative 3.

Other minor changes were made to unit boundaries based on field reconnaissance, logging systems, accessibility, and access. General treatment areas remained much the same.

This alternative proposes the same areas and methods of using prescribed fire as Alternative 2 to increase forage quality and quantity for big game species.

This alternative proposes the same BMP treatments on existing roads as Alternative 2. Approximately 47 miles of road would be treated to improve surface water management and reduce sediment generated from roads.

The following activities are proposed in Alternative 3:

### **Commercial Thinning**

Approximately 565 acres in 17 units (Units 1, 2, 3, 16, 19, 21A, 21B, 23B, 24, 26, 28, 28A, 29, 34, 34A, 35, and 36) would be thinned. Approximately 204 acres would be harvested using ground-based equipment and 328 acres would utilize a cable system.

### **Regeneration Harvest and Reforestation**

Approximately 898 acres would be regenerated. Treatment methods, including seed tree and shelterwood prescriptions, would result in a condition that would allow the establishment of a new stand following harvest, and are similar to those described in Alternative 2. Much of the increase in acreage of regeneration harvest is directly related to the amount of lodgepole pine currently experiencing mortality from mountain pine beetle attack in upper Pilgrim Creek. The

emphasis in these areas is on removing lodgepole pine, so all trees of other species will be retained, with the exception of smaller understory trees and those trees that need to be removed to facilitate harvest activities. Due to the high proportion of lodgepole pine in most of these stands, the number of trees expected to be removed for this purpose is low. Unit-specific regeneration methods can be found in Table 2-6.

**Table 2-4. Activity Summary for Alternative 3**

<b>SUMMARY TABLE ALTERNATIVE 3</b>	
<b>Silvicultural Treatments</b>	
Intermediate Harvest (commercial thinning)	510 acres
Intermediate Harvest ( aspen enhancement)	26 acres
Regeneration Harvest	898 acres
- Seed Tree (512 acres)	
- Shelterwood (386 acres)	
<b>Total Harvest</b>	<b>1,434 acres</b>
<b>Required Planting</b>	<b>357 acres</b>
<b>Natural Regeneration</b>	<b>541 acres</b>
<b>Species Diversity Planting</b>	<b>Up to 368 Acres</b>
<b>Logging Systems</b>	
Tractor	551 acres
Skyline	883 acres
<b>Fuels Treatments- Activity and Natural Fuels</b>	<b>5,998 acres</b>
Activity Fuel Treatments	
Underburning of activity fuels	505 acres
Broadcast burning of activity fuels	93 acres
Machine piling of activity fuels	481 acres
Lop and Scatter activity fuels (no burn)	355 acres
Natural Fuels Reduction Activities	
Ecosystem Burning	4,564 acres
(3,252 acres included in IRAs)	
<b>Harvest Related Road Work</b>	
Road Reconstruction/BMP Implementation	47 miles
New Road Construction	4.7 miles
Temporary road Construction	1.1 miles

## Openings Greater than 40 acres

Like the proposed action, alternative 3 would create openings greater than 40 acres. Alternative 3 would initiate seven openings for a total of 1,002 acres. Three openings (201 acres, 275

acres, and 184 acres) will result from regeneration harvest in stands being infested by mountain pine beetle or infected with root disease. While the remaining regeneration harvest units have occurrences of mountain pine beetle or root disease, they are generally over 40 acres due to their juxtaposition to each other or existing openings (Table 2-5).

The head of Skeleton Creek is the main area where the mortality in lodgepole pine by mountain pine beetle is considered moderate to high in severity. The remaining areas of proposed regeneration harvest over 40 acres occur in root disease areas.

Table 2-5. Over 40 acre Openings in the Alternative 3

Unit	Proposed Treatment	Acres	Cumulative Opening Size	Rationale for large openings	Regional Forester Approval Needed
4	Shelterwood w/ Reserves	35	113	Heavy root rot adjacent to existing opening.	YES
Existing opening	None	9			
Existing opening	None	15			
5	Shelterwood w/Reserves	46			
6	Shelterwood w/Reserves	8	201	Mortality in lodgepole pine due to mountain pine beetle	NO
largest section of 8	Shelterwood w/ Reserves	46			
10T	Seedtree w/ Reserves	18			
10S	Seedtree w/ Reserves	61			
10B	Seedtree w/ Reserves	76			
12S	Seedtree w/ Reserves	10	321	Mortality in lodgepole pine due to mountain pine beetle, root rot.	YES
12	Seedtree w/ Reserves	171			
Existing Openings	None	39			
12B	Shelterwood w/ Reserves	75			
18	Shelterwood w/ Reserves	26			
Existing Opening	Seedtree w/ Reserves	18	43	Mortality in lodgepole pine due to mountain pine beetle	NO
Existing Opening		21			
23		4			
31	Seedtree w/ Reserves	30	50	Mortality in lodgepole pine due to mountain pine beetle	NO
32	Seedtree w/ Reserves	10			
Existing opening	None	10			
39	Shelterwood w/ Reserves	20	87	Heavy root rot adjacent to existing openings/visuals.	YES
Existing Opening	Seedtree w/ Reserves	32			
40		35			

Unit	Proposed Treatment	Acres	Cumulative Opening Size	Rationale for large openings	Regional Forester Approval Needed
37	Shelterwood w/ Reserves	34	187	Heavy root rot adjacent to existing openings/visuals.	YES
39A	Shelterwood w/ Reserves	36			
39B	Seedtree w/ Reserves	33			
40B	Shelterwood w/ Reserves	29			
40C	Shelterwood w/ Reserves	19			
Existing Opening	None	36			

A map of this alternative can be found in Appendix A of this DEIS.

**Table 2-6. Alternative 3 Unit Treatment Summary**

Unit	Acres	Treatment	Logging System	Slash Treatment	Regeneration Method (if applicable)
1	26	Aspen enhancement	Tractor	YT/FAS/FDR/GP/JB	N/A
2	68	CT	Tractor	YT/FDR/GP/JB	N/A
3	69	CT	Tractor	YT/S/GP/JB	N/A
4	35	SW	Skyline	YT/FDR/L+S (No Burn)	Plant
5	14	SW	Skyline	YT/FDR/GP (No Burn)	Plant
6	8	SW	Skyline	YT/FDR/GP (No Burn)	Plant
8	62	SW	Skyline	YT/FDR/L+S (No Burn)	Natural
10T	18	ST	Tractor	LT/FDR/BB	Natural
10S	61	ST	Skyline	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity

Unit	Acres	Treatment	Logging System	Slash Treatment	Regeneration Method (if applicable)
10B	75	ST	Skyline	YT/FDR/UB	Natural, plant WP/WL for spp. Diversity
11B	25	ST	Skyline	YT/FDR/UB	Natural
12S	10	ST	Skyline	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity
12	171	ST	Tractor	YT/FDR/GP/JP	Natural, plant WP/WL for spp. Diversity
12B	75	SW	Skyline	YT/FDR/UB	Natural
16	8	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
18	26	SW	Skyline	YT/FDR/UB	Plant
19	26	CT	Skyline	YT/FDR/UB	N/A
21A	31	CT	Skyline	YT/FDR/UB	N/A
21B	30	CT	Tractor	YT/FDR/UB	N/A
23	4	ST	Tractor	LT/FDR/BB(Fire line)	Natural, plant WP/WL/PP for spp. Diversity
23B	18	CT	Tractor	YT/FDR/UB	N/A
24	21	CT	Skyline	YT/FDR/UB	N/A
25	30	SW	Skyline	YT/FAS/UB	Plant
26	57	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
27	30	ST	Skyline	YT/FDR/UB	Plant
28	20	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
28A	3	CT	Tractor	YT/FDR/GP/JP	N/A
29	16	CT	Tractor	YT/FDR/GP/JP	N/A
30	10	ST	Tractor	YT/FDR/GP/JP	Natural
31	30	ST	Skyline	YT/FDR/UB	Natural
32	10	ST	Tractor	YT/FDR/GP	Plant

Unit	Acres	Treatment	Logging System	Slash Treatment	Regeneration Method (if applicable)
34	27	CT	Skyline	YT/TNS/FDR/FAS/UB	N/A
34A	26	CT	Skyline	YT/TNS/FDR/FAS/UB	N/A
35	56	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
36	34	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
37	34	SW	Skyline	YT/FDR/L+S (No Burn)	Plant
39	20	SW	Tractor	YT/FDR/GP/JB	Plant
39A	36	SW	Tractor	YT/FDR/GP/JB	Plant
39B	33	ST	Tractor	YT/S/GP/JB	Plant
40	35	ST	Skyline	YT/FAS/UB	Plant
40B	27	SW	Skyline	YT/FDR/L+S (No Burn)	Plant
40C	19	SW	Tractor	YT/S/GP/JB	Plant

Slash Treatment Key: BB= Broadcast Burn, FDR= Fall Damaged Residuals (understory), GP= Grapple Pile, burn piles, JB= Jackpot Burn, L+S= Lop and Scatter, LT= Leave Tops, UB= Underburn, YT= Yard Tops to landing, TNS= Take non-saw, FAS= Force account slash (Forest Service crews)

## **Proposed Road Work**

An additional 4.7 miles of new permanent road and approximately 1.1 miles of temporary road would be needed for harvest access and would be stabilized upon completion of harvest activities. Approximately 0.4 miles of this would involve using previously undisturbed corridors. Approximately 0.7 miles of the temporary road would utilize an existing prism that would require minimal clearing and excavation to utilize. It is located on a relatively gentle slope without extensive cuts and fills. Following completion of harvest activities, this road would be ripped and seeded to prevent surface erosion, have slash scattered on it to provide for long-term nutrients and organic material, and have a barrier installed to prevent wheeled traffic use.

Proposed new roads would be restricted to administrative use only during sale-related activities and access would be controlled by a gate or other closure mechanism.

Proposed temporary roads would also be restricted to administrative use only during sale-related activities, and following completion of the sale would be returned to near natural contours, revegetated, and made effectively impassable to motorized vehicles.

## **MA 12 Forest Plan Amendment**

This alternative would include a project-specific, non-significant Forest Plan amendment to allow an increase in open road density on big game summer range (MA 12) outside of the Stevens Ridge Amendment Area- roughly the north half of the Pilgrim Project Area. Alternative 3 would result in a maximum ORD of 2.6 mi/mi<sup>2</sup> during operations, and ORD would drop back to the current 1.9 mi/mi<sup>2</sup> post-project.

## **Alternative 4**

### **Purpose and Design:**

- Alternative 4 was designed to evaluate an alternative that constructed no new roads and still responded to the purpose and need for action.
- It also placed an emphasis on harvest of dead and dying lodgepole but did so from existing roads.
- Proposed prescribed burning to improve big game forage is identical to other action alternatives.

### **Description:**

Alternative 4 was developed to evaluate an alternative that built no new roads, allowing clear disclosure of potential impacts to economics, wildlife, and how well it responded to the purpose and need for the project. It also included a focus on capturing the economic value in lodgepole pine being affected by mountain pine beetle that could be accessed from the existing road system. Implementation of this alternative would also result in several openings exceeding 40 acres in size, for which Regional Forester approval is required. Again, upper Pilgrim Creek is the main area where the mortality in lodgepole pine by mountain pine beetle is considered moderate to high in severity. The remaining areas of proposed regeneration harvest over 40 acres occur in root disease areas. An internal concern which shaped formulation of this alternative was the possible influence of commercial thinning in stands with moderate levels of root disease. There is a concern that intermediate harvest as proposed in Alternative 2 would retain more root disease-susceptible trees on the site, thereby perpetuating the development of stand conditions more conducive to root disease than if regeneration harvest was used. Several units where root disease is active at moderate to high levels were changed to regeneration harvest types in this alternative. Specifically, Units 25, 37, 39, and 40 would be regenerated under this alternative.

Similar to alternative 3, a number of units, primarily in upper Pilgrim Creek, were increased in size as a result of recently discovered increases in mountain pine beetle activity. Units that

would have been accessed by new permanent or temporary road were modified or dropped from this alternative. Specifically:

Units 8 and 9 were combined into Units 8T and 8S and increased in size from a total of 45 acres to 182 acres. Lodgepole pine would be the primary species removed from these units.

Unit 10 increased in size from 43 acres to 86 acres.

Unit 11 was dropped, as it would have required a short temporary road for access.

Unit 12 was moved and modified to encompass portions of Units 13, 14, and 15, and 17. The total area treated decreased from 127 acres to 100 acres.

Units 20 and 21 were dropped due to higher priority treatment areas in the vicinity and a desire to protect stream conditions by limiting water yield increases.

Units 21A and 21B were added to this alternative. These units, 15 and 47 acres respectively, would be commercially thinned to improve growing conditions for ponderosa pine and western larch, primarily.

Units 23 and 23B would harvest primarily lodgepole pine, and would be four and 18 acres in size. They are located adjacent to units 21A and 21B.

Unit 33 would have required new road construction for access, so it was dropped from this alternative.

Unit 34 was increased in size based on the ability to treat a wider swath adjacent to private property to increase the effectiveness of fuel treatments in this unit.

Unit 35 was moved below the road and increased in size from 27 to 49 acres. The new unit would be logged from the existing road. This change resulted in foregoing approximately 0.7 miles of new, permanent road that would have been required to access the original location of this unit. This unit change was made to improve the economics of the project and avoid the need for new road.

Units 36 and 37 would have required new road construction for access, so they were dropped from this alternative.

Unit 39A was created from Unit 39 and that portion of Unit 37 that could be accessed from the existing road. It is a regeneration unit in a Douglas-fir stand with moderate to high levels of root disease, and is 62 acres in size.

Unit 40 was redrawn to include Unit 41 from Alternative 2 and increased slightly in size from 128 acres to 137 acres. The proposed treatment for the area where Unit 41 was delineated was changed from a commercial thin to a regeneration (shelterwood) harvest in this alternative due to moderate levels of root rot and concerns about exacerbating its effects by thinning.

This alternative proposes the same areas and methods of using prescribed fire as Alternative 2 to increase forage quality and quantity for big game species.

This alternative proposes the same BMP treatments on existing roads as Alternative 2. Approximately 47 miles of road would be treated to improve surface water management and reduce sediment generated from roads. No new roads (permanent or temporary) would be required to implement this alternative.

A map of this alternative is available in Appendix A of this DEIS.

Table 2-7. Activity Summary for Alternative 4

SUMMARY TABLE ALTERNATIVE 4	
<b>Silvicultural Treatments</b>	
Intermediate Harvest (commercial thinning)	451 acres
Intermediate Harvest (coppice- aspen enhancement)	26 acres
Regeneration Harvest	813 acres
- Seed Tree (303 acres)	
- Shelterwood (510 acres)	
<b>Total Harvest</b>	<b>1,290 acres</b>
<b>Required Planting</b>	<b>383 acres</b>
<b>Natural Regeneration</b>	<b>430 acres</b>
<b>Species Diversity Planting</b>	<b>Up to 208 Acres</b>
<b>Logging Systems</b>	
Tractor	550 acres
Skyline	740 acres
<b>Fuels Treatments- Activity and Natural Fuels</b>	<b>5,854 acres</b>
Activity Fuel Treatments	
Underburning of activity fuels	333 acres
Broadcast burning of activity fuels	90 acres
Machine piling of activity fuels	397 acres
Lop and Scatter activity fuels (no burn)	470 acres
Natural Fuels Reduction Activities	
Ecosystem Burning	4,564 acres
(3,252 acres included in IRAs)	
<b>Harvest Related Road Work</b>	
Road Reconstruction/BMP Implementation	47 miles
New Road Construction	0.0 miles
Temporary road Construction	0.0 miles

To accomplish desired conditions, the following treatment methods are proposed:

### Commercial Thinning

Approximately 451 acres in 15 units are proposed for commercial thinning (Units 2, 3, 5, 6, 16, 19, 21A, 21B, 24, 28, 28A, 29, 34, 34A, and 35).

## **Regeneration Harvest and Reforestation**

Approximately 813 acres in 17 units (Units 4, 8S, 8T, 10, 12, 18, 23, 23B, 25, 27, 30, 31, 32, 39, 39A, 39B, and 40) are proposed for regeneration harvesting. Approximately 303 acres would be harvested using a seed tree prescription and 510 acres would be treated as a shelterwood.

## **Existing Road Treatments**

Existing roads would be maintained and improved and brought up to current BMP standards. Approximately 5.2 miles of closed road would be reopened and used for this project. These roads include NFSRs 2718, 2719, 2744C, and 2744D. All other existing roads to be used for this project are currently open either yearlong or seasonally.

## **Openings Greater than 40 acres**

Alternative 4 would initiate 5 openings for a total of 798 acres. Three of these openings (268 acres, 119 acres, and 294 acres) will result from regeneration harvest in stands being attacked by mountain pine beetle or infested with root disease, and within 600 feet of an existing opening. While the remaining regeneration harvest units have occurrences of mountain pine beetle or root disease, they are generally over 40 acres due to their juxtaposition to each other or existing openings. Units 39, 39A, 39B, and 40 are located in an area visible from Highway 200 on a prominent, visible slope. These units were shaped and located so as to blend best into the surrounding topography and view-shed within the capabilities of available logging systems, and resulted in a larger opening.

**Table 2-8. Over 40 acre Openings in Alternative 4**

Unit	Proposed Treatment	Acres	Cumulative Opening Size	Regional Forester Approval Needed
4 Existing opening	Shelterwood w/ Reserves None	35 9	44	NO
8S 8T 10 Existing opening	Shelterwood w/ Reserves Shelterwood w/ Reserves Seedtree w/ Reserves None	118 64 86 25	293	NO
12 18 Existing Opening	Seedtree w/ Reserves Shelterwood w/ Reserves None	100 26 39	165	YES
23 Existing Opening Existing Opening Existing Opening 23B	Seedtree w/ Reserves    Shelterwood w/ Reserves	4 18 21 16 18	77	NO
31 32 Existing opening	Seedtree w/ Reserves Seedtree w/ Reserves None	30 10 9	49	NO
39  39A 39B 40 Existing Opening	Shelterwood w/ Reserves  Shelterwood w/ Reserves Seedtree w/ Reserves Shelterwood w/ Reserves None	20  62 33 137 68	294	YES

**Table 2-9. Alternative 4 Unit Treatment Summary**

Unit	Acres	Treatment	Logging System	Slash Treatment	Regeneration Method (if applicable)
1	26	Coppice	Tractor	YT/S/GP/JB	N/A
2	68	CT	Tractor	YT/FDR/GP/JB	N/A
3	69	CT	Tractor	YT/FDR/GP/JB	N/A
4	35	SW	Skyline	YT/FDR/L+S (No Burn)	Plant
5	46	CT	Skyline	YT/FDR/L+S (No Burn)	N/A

<b>Unit</b>	<b>Acres</b>	<b>Treatment</b>	<b>Logging System</b>	<b>Slash Treatment</b>	<b>Regeneration Method (if applicable)</b>
6	8	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
8S	118	SW	Skyline	YT/FDR/L+S (No Burn)	Natural
8T	64	SW	Tractor	YT/FDR/L+S (No Burn)	Natural
10	86	ST	Skyline	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity
12	100	ST	Tractor	YT/FDR/GP/JB	Natural, plant WP/WL for spp. Diversity
16	8	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
18	26	SW	Skyline	YT/FDR/UB	Plant
19	26	CT	Skyline	YT/FDR/UB	N/A
21A	15	CT	Skyline	YT/FDR/UB	N/A
21B	47	CT	Tractor	YT/FDR/UB	N/A
23	4	ST	Tractor	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity
23B	18	SW	Tractor	YT/FDR/UB	Natural, plant WP/WL for spp. Diversity
24	21	CT	Skyline	YT/FDR/UB	N/A
25	30	SW	Skyline	YT/FAS/UB	Plant
27	30	ST	Skyline	YT/FDR/UB	Plant
28	20	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
28A	3	CT	Tractor	YT/FDR/GP/JB	N/A
29	16	CT	Tractor	YT/FDR/GP/JB	N/A
30	10	ST	Tractor	YT/FDR/GP/JB	Natural
31	30	ST	Skyline	YT/FDR/UB	Natural
32	10	ST	Tractor	YT/FDR/GP	Plant
34	29	CT	Skyline	YT/TNS/FDR/FAS/UB	N/A
34A	26	CT	Skyline	YT/TNS/FDR/FAS/UB	N/A
35	49	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
39	20	SW	Tractor	YT/FDR/L+S (No Burn)	Plant
39A	62	SW	Tractor	YT/FDR/GP/JB	Plant
39B	33	ST	Tractor	YT/S/GP/JB	Plant
40	137	SW	Skyline	YT/FDR/L+S/UB (UB 35ac)	Plant

Slash Treatment Key: BB= Broadcast Burn, FDR= Fall Damaged Residuals (understory), GP= Grapple Pile, burn piles, JB= Jackpot Burn, L+S= Lop and Scatter, LT= Leave Tops, UB= Underburn, YT= Yard Tops to landing

### MA 12 Forest Plan Amendment:

This alternative would not build any new roads but would open existing roads that are currently closed. This alternative would include a project-specific, non-significant Forest Plan amendment to allow an increase in open road density on big game summer range (MA 12) outside of the Stevens Ridge Amendment Area- roughly the north half of the Pilgrim Project Area. Alternative 4 would result in a maximum ORD of 2.4 mi/mi<sup>2</sup> during operations, and ORD would return to the current 1.9 mi/mi<sup>2</sup> post-project.

### MA 10 Forest Plan Amendment:

This alternative would require a project-specific, non-significant Forest Plan amendment to allow a reduction in cavity habitat associated with snag removal. Unit 40 proposes treatment in approximately 6 acres of MA 10.

## Alternative 5

### Purpose and Design:

- Alternative 5 was developed to examine an alternative that did not build new road, did not create openings over 40 acres in size, fully met all Forest Plan standards, and did not require any amendments to the Forest Plan.
- Emphasized harvest of dead and dying lodgepole pine from existing roads while not creating openings over 40 acres in size.
- Proposed prescribed burning to improve big game forage is identical to other action alternatives.

**Description** – This alternative was developed to evaluate an alternative that built no new roads, created no openings over 40 acres in size, did not require any amendments to the Forest Plan, and met the purpose and need for action. This alternative emphasized harvest of dead and dying lodgepole pine to the extent that was feasible from existing roads and keeping opening size under 40 acres.

### Openings Greater than 40 Acres

Alternative 5 does not include any regeneration openings exceeding 40 acres in size.

Table 2-10 Activity Summary for Alternative 5

Unit	Acres	Treatment	Logging System	Slash Treatment	Regeneration Method (if applicable)
1	26	Coppice	Tractor	YT/S/GP/JB	N/A
2	68	CT	Tractor	YT/FDR/GP/JB	N/A
3	69	CT	Tractor	YT/FDR/GP/JB	N/A
4	24	SW	Skyline	YT/FDR/L+S (No Burn)	Plant
8	32	SW	Skyline	YT/FDR/L+S (No Burn)	Natural
10	40	ST	Skyline	LT/FDR/BB	Natural, plant WP/WL for spp. Diversity
12S	10	ST	Skyline	LT/FDR/BB	Natural
13	19	SW	Tractor	YT/FDR/GP/JB	Natural, plant WP/WL for spp. Diversity
18	26	SW	Skyline	YT/FDR/UB	Plant
19	26	CT	Skyline	YT/FDR/UB	N/A
20	32	ST	Skyline	YT/FDR/BB	Plant
21B	30	CT	Tractor	YT/FDR/UB	N/A
24	21	CT	Skyline	YT/FDR/UB	N/A
25	30	SW	Skyline	YT/FAS/UB	Plant
28	20	CT	Skyline	YT/FDR/L+S (No Burn)	N/A
28A	3	CT	Tractor	YT/FDR/GP/JB	N/A

Unit	Acres	Treatment	Logging System	Slash Treatment	Regeneration Method (if applicable)
29	16	CT	Tractor	YT/FDR/GP/JB	N/A
30	8	ST	Tractor	YT/FDR/GP/JB	Natural
31	30	ST	Skyline	YT/FDR/UB	Natural
32	10	ST	Tractor	YT/FDR/GP	Plant
34	27	CT	Skyline	YT/TNS/FDR/FAS/UB	N/A
34A	26	CT	Skyline	YT/TNS/FDR/FAS/UB	N/A
35	39	CT	Skyline	YT/FDR/L+S (No Burn)	N/A

**Slash Treatment Key:** BB= Broadcast Burn, FDR= Fall Damaged Residuals (understory), GP= Grapple Pile, burn piles, JB= Jackpot Burn, L+S= Lop and Scatter, LT= Leave Tops, UB= Underburn, YT= Yard Tops to landing, TNS= Take non-saw, FAS= Force account slash (Forest Service crews)

### Commercial Thinning

Approximately 371 acres in 12 units (Units 1, 2, 3, 19, 21B, 24, 28, 28A, 29, 34, 34A, and 35) would be thinned. Approximately 212 acres would be harvested using ground-based equipment and 159 acres would utilize a cable system.

### Regeneration Harvest and Reforestation

Approximately 261 acres would be regenerated, and would be nearly equally split between seed tree and shelterwood methods. Harvest of dead and dying lodgepole pine is the primary

objective in units 8, 10, 12S, 13, 30, 31, and 32. These stands would be allowed to naturally regenerate back to lodgepole pine, but may have some other species such as western larch or western white pine planted for species diversity on suitable sites. The remaining regeneration units (4, 18, 25, 34, and 34A) would be regenerated and replanted with root disease resistant species such as larch, white pine, or ponderosa pine as appropriate.

**Table 2-11. Alternative 5 Unit Treatment Summary**

SUMMARY TABLE ALTERNATIVE 5	
<b>Silvicultural Treatments</b>	
Intermediate Harvest (commercial thinning)	371 acres
Regeneration Harvest	261 acres
- Seed Tree (130 acres)	
- Shelterwood (131 acres)	
<b>Total Harvest</b>	<b>632 acres</b>
<b>Required Planting</b>	<b>122 acres</b>
<b>Natural Regeneration</b>	<b>139 acres</b>
<b>Species Diversity Planting</b>	<b>Up to 59 Acres</b>
<b>Logging Systems</b>	
Tractor	383 acres
Skyline	249 acres
<b>Fuels Treatments- Activity and Natural Fuels</b>	<b>5,196 acres</b>
Activity Fuel Treatments	
Underburning of activity fuels	216 acres
Broadcast burning of activity fuels	82 acres
Machine piling of activity fuels	219 acres
Lop and Scatter activity fuels (no burn)	115 acres
Natural Fuels Reduction Activities	
Ecosystem Burning	4,564 acres
(3,252 acres included in IRAs)	
<b>Harvest Related Road Work</b>	
Road Reconstruction/BMP Implementation	47 miles
New Road Construction	0.0 miles
Temporary road Construction	0.0 miles

## Existing Road Treatments

Existing roads would be maintained and brought up to BMP standards. Approximately 2.8 miles of closed road would be reopened and used for this project. These roads include NFSRs 2719 and 2746. All other roads to be used for this project are either open yearlong or seasonally.

Approximately 47 miles of existing roads would have surface drainage established or improved, have undersized culverts replaced to the extent that money is available

## Features Common to all Action Alternatives

To accomplish desired conditions, the following treatment methods are proposed:

### Timber Management Strategies and Silvicultural Tools:

All action alternatives employ silvicultural prescriptions designed to meet various resource objectives. They can be grouped as (1) seedtree regeneration harvest with permanent reserves, (2) shelterwood regeneration harvest with permanent reserves, or (3) commercial thinning. Harvest unit boundaries and shapes would be dependent on terrain limitations for logging systems. Safety concerns based on OSHA regulations, removal of hazard trees, construction of landings, skid trail location and skyline corridors all have potential to influence the layout of units. In addition, design criteria include the following:

- Slash left after harvest would be burned during open burning season. Timing of burning would be selected to accomplish objectives while reducing smoke impacts, risk of escape and unacceptable loss of overstory trees. Specific slash treatments for each unit are described in Tables 2-5, 2-8, and 2-11, and 2-12 Harvest Treatment Summary Tables.
- Treatment areas in the selected alternative would be surveyed prior to implementation to ensure protection of Sensitive plant populations.

**Size of Harvest Areas:** The following factors were considered in evaluating the size of proposed harvest units for all action alternatives: topography; effects on wildlife and fish habitat; regeneration requirements for desirable tree species; transportation and harvest system requirements; relative cost; and visuals. Where large timber harvest units were developed for an alternative it was done for the following reasons:

- **Root disease and other insect and disease processes.** Much of the mid-successional forest, dominated by high density Douglas-fir and grand fir is at an age and in a condition that predisposes them to epidemic insect and disease mortality. Root disease is impacting stands throughout the area and large harvest treatments are proposed to maximize the number of infected acres treated.
- **Mountain pine beetle on lodgepole pine-dominated sites.** Mountain pine beetle populations have increased markedly within the last two years in portions of the project area. Those areas with high levels of mortality have been targeted for removal of lodgepole pine to capture some economic value. Generally, lodgepole pine will be encouraged to naturally regenerate to increase age class diversity in lodgepole pine forest types, but some areas will have a small number (approximately 200 trees per acre) of western larch and/or western white pine planted to increase species diversity and make the stands more resilient to future insect outbreaks. Lodgepole pine-

dominated stands are generally restricted to higher elevation sites in the project area and do not constitute a large percent of the area, but often occur in relatively large blocks. Treatment of this forest type would result in relatively large harvest units.

- Alternative 5 does not propose creation of openings larger than 40 acres. All other action alternatives do.

## **Mechanical Removal of Sawtimber**

Removal of saw timber-sized trees is proposed to modify stand density and/or alter species composition. All timber harvest would leave snags, live green trees, coarse woody material, and desirable hardwoods. Logging systems would include tractor and skyline yarding systems. Where access is available and slopes are generally less than 35-40 percent slope, tractor yarding would be used. Where slopes exceed 35-40 percent and road access is available, skyline yarding systems would be used. Where slopes are less than 50% and soil conditions allow, a tracked feller-buncher may be used to cut trees that would then be yarded with the skyline.

## **Commercial Thinning**

Proposed units would be thinned to increase the distance between tree crowns, thereby reducing the overall stocking level within proposed units. Thinning would be used to increase the spacing between residual trees to reduce within-stand competition and encourage growth. Harvest would remove trees primarily from the lower and intermediate canopy that are generally composed of shade tolerant species. Healthy western larch, ponderosa pine, and western white pine are considered fire and insect/disease-resistant species and would be favored for retention wherever they are found in the units. Target basal areas (a measure of stand density or crowding) after thinning would range between 60 to 100 square feet of basal area per acre, depending on site productivity, and emphasis would be placed on retaining larger, healthier trees. In certain areas where numerous fire resilient tree species or trees larger than 20 inches dbh occur, more than 80 square feet of basal area per acre would be retained.

In addition, some of the smaller, understory trees would be removed from these areas to reduce the ladder fuel component, decreasing the chance that a ground fire could travel from the forest floor up into the tree canopy. Thinning would create spaces between crowns of desirable leave trees, lowering the risk of active crown fire. Thinning also reduces competition within forest stands, increases residual tree growth and vigor, and helps create stands with species composition and structures that are more ecologically resilient to potential disturbances.

In units proposed to be thinned using ground-based equipment (tractor), slash generated from harvesting on these acres would be piled with an excavator and the piles burned after treatment.

In units proposed to be harvested using skyline systems (cable), trees would be yarded to a landing. Generally, slash would be treated by yarding tops to the landing and then lopping and scattering residual slash and damaged residual understory trees to reduce the height of the fuel bed. In some areas, commercial thinning would be followed by underburning where residual trees can survive a light ground fire.

## **Regeneration Harvest and Reforestation**

Regeneration harvest, including seed tree and shelterwood systems, would occur in some dense forest stands that are currently at high risk for insect attacks. Seed tree and shelterwood systems are similar, varying only by the amount and distribution of reserve trees.

Tree retention (reserve/leave trees) is predicated on the number of desirable trees in the stand. Favored species to leave are western larch and ponderosa pine, but also include larger, healthy Douglas-fir and western white pine. Many of these mixed conifer stands have the potential to support a variety of tree species and, after regeneration harvest and associated fuel treatments, would be planted with appropriate amounts of western larch, western white pine, and ponderosa pine.

Some units would harvest lodgepole pine that is experiencing significant mortality due to mountain pine beetle activity. Lodgepole pine would be the primary species removed. Natural regeneration of lodgepole pine would be the primary means of reforestation, though some units may be planted with western larch or western white pine for species diversity. Most, but not all (see alternative activities tables), regenerated units would require the yarding of tree tops to the landing, and other concentrations of slash would be lopped and scattered in the unit. Underburning and/or broadcast burning will occur, primarily in areas dominated by lodgepole pine to aid in natural regeneration of that species.

## **Seed tree with Reserves**

Units proposed for a seed tree with reserves prescription would leave a residual stand consisting of at least 10 desirable trees per acre, and contain on average less than 30 square feet of basal area per acre of canopy dominant or co-dominate sized trees. Reserves are those trees of desired larger diameter that are an important structural component in existing stands and may function as important wildlife habitat, future snags, and coarse woody debris or promote aesthetics in area with viewing sensitive management areas. Reserve trees are not meant for later removal but are considered to be desirable assets for the duration of new stand development.

Favored species to retain are western larch and ponderosa pine, but also include larger healthy Douglas-fir and western white pine. The reserves are left to provide the diversity of structure and incidental seed sources of the past to enhance, maintain and sustain attributes desirable in the future natural fire regime.

## **Shelterwood with Reserves**

Some units would be treated with “shelterwood with reserves” treatments. This is proposed where there are enough trees of desirable size or species in good health and vigor to contribute as a viable seed source or meet other resource values such as aesthetics, hydrology, and wildlife. More than 10 trees per acre would be retained, averaging greater than 40 square feet of basal area throughout the stand. The shelterwood area may have a clumpy distribution because groups of trees rather than solitary trees would be left scattered throughout the stands. Trees of other species will be harvested that have signs of insect and disease. Favored species

to leave are western larch and ponderosa pine, and larger healthy Douglas-fir and western white pine. Reserves would be of larger diameter trees that are an important structural component in existing stands and may function as important wildlife habitat, future snags, and coarse woody. Reserve trees are desirable for the duration of new stand development.

### **Reforestation- Planting**

After completion of timber harvest and slash/fuel treatments, some regenerated units would be planted with site-appropriate tree seedlings. These species include fire, disease, and insect-resistant species suited to the site; such as western larch, ponderosa pine, and western white pine. Planting of these species would help increase diversity and the long-term resilience of the new forest stands.

### **Reforestation- Natural Regeneration**

Some units would rely primarily on natural regeneration of lodgepole pine for reforestation, though some areas would be planted with up to 200 western larch and/or western white pine per acre for species diversity. Prescribed burning is generally used to release seeds from lodgepole pine cones and expose adequate substrate for successful germination.

### **Openings Over 40 Acres**

Three of the action alternatives (alternatives 2, 3, and 4) would result in openings over 40 acres in size, though the number and size of these openings vary by alternative. Note that alternative 5 does not include openings exceeding 40 acres. Some of the openings exceed 40 acres total. Others exceed the NFMA 40 acre opening size limitation when combined with adjacent units, which together result in a contiguous opening over 40 acres. The following unit-level discussion, by alternative, displays those units exceeding 40 acres.

Mountain pine beetle continues to increase in lodgepole stands of the analysis area. A site visit by a regional pathologist confirmed that *“a significant amount of MPB-caused tree mortality will probably occur over the next 2 years, barring any unusual weather circumstances”* (USDA, 2010). This is expected as populations are at extremely high levels in surrounding Forests including the Idaho Panhandle, Flathead, Lolo, Helena, etc. (USDA 2009). MPB has reduced the stocking in some stands to unacceptable levels. The majority of the high-risk stands, those with higher percentages of mature to over-mature pine, have already sustained appreciable mortality. Salvage or sanitation harvest of these lodgepole pine stands would allow some capture of economic value. Many lodgepole pine dominated stands exceed 40 acres in size, and should be treated in their entirety to address this issue.

The remaining areas of proposed harvest over 40 acres occur in root disease areas, totaling 126 acres. Residual stands of regeneration or commercial thinning will have a lower number of trees to be affected by surrounding endemic infestation or infection.

## Activity Fuels Treatment

Activity fuels can be defined as the slash resulting from or altered by management practices such as timber harvesting, thinning or road construction. Activity fuel reduction would be applied to units that contain timber harvest slash. Slash disposal would take place after timber harvest has been completed.

The following descriptions are fuel treatment options that will best balance resource objectives and economic concerns.

- **Underburning.** This fuel treatment method would be used to accomplish silvicultural objectives, natural and activity fuel hazard reduction, wildlife habitat enhancement, and forest health objectives. In general, underburning on southern and western aspects would be done during either the spring (March through June) or fall (September through November) burn seasons while underburning on north and east aspects would be done during the late summer and fall burning season (late August through November).
- **Whole tree yarding followed by pile burning.** This fuel treatment method consists of yarding the entire portion of the tree (bole, top and limbs) into a landing area for processing of logs and disposal of slash. This method is often used in combination with other treatments. Piles of yarded material are generally burned in late fall after receiving enough moisture to reduce the spread of fire in open areas.
- **Machine (grapple) piling followed by pile burning.** This treatment method would be used to accomplish a range of resource objectives in treatment areas where the stand density, topography, proximity to private land or visual concerns preclude the use of underburning. Piled slash would generally be burned in late fall after receiving adequate moisture to reduce the spread of fire in open areas and before the piled material becomes too wet to burn.
- **Hand Piling followed by pile burning.** This treatment method would be used to accomplish resource objectives where underburning is not feasible or desirable and are generally too steep for machine piling to be effective. Hand piling is focused on finer fuels that contribute to rapid fire spread. Piled slash would generally be burned in late fall after receiving adequate moisture to reduce the spread of fire in open areas and before the piled material becomes too wet to burn.
- **Lop and Scatter.** This treatment method reduces fuel bed height by lopping (severing) limbs from the top and scattering the slash to reduce fuel continuity. This method is often used in combination with whole tree yarding to disperse concentrations of fuel resulting from breakage or damaged residual (understory) trees.
- **Fell Damaged Residuals.** Generally smaller (submerchantable) trees damaged by logging activities are to be felled and limbed then bucked into lengths shorter than five feet.

Activity-generated fuel treatments for individual units can be found in Table 2-3, 2-6, 2-9 and 2-10.

## **Prescribed Fire for Natural Fuels Reduction**

Prescribed burning is proposed on approximately 4,564 acres within a 6,950 acre perimeter to improve big game forage quality and quantity in all three action alternatives. Natural changes since the 1910 fire have resulted in an increase in tree cover and a decrease in early successional forage across much of the project area. To increase forage availability and quality, high energy slopes would be burned, primarily in the spring, to stimulate early successional vegetation and reduce tree cover where encroachment is reducing the amount of forage available.

Prescribed burning is a land management treatment used during specified conditions to accomplish natural resource management objectives. Prescribed fires are conducted within limits of a burn plan and prescription that describes the conditions under which the burn can be conducted to meet these resource objectives. Prescribed fire is a cost-effective and ecologically sound tool for forest and range management. Its use reduces ground fuels, controls insect and disease, improves wildlife habitat and forage production, and maintains natural succession of plant communities. In addition, this practice reduces the potential for high-intensity forest fires.

Prescribed burning is also a tool that can be used to meet desired vegetative conditions in areas where other methods, such as timber harvest, are not available due to steep slopes, administrative designations, or low productivity sites. Inventoried roadless areas comprise approximately 42% of the planning area and provide important seasonal habitats and security areas for a variety of wildlife species. Forage enhancement is desired in many of these areas, and approximately 3,252 acres of prescribed burning is proposed within inventoried roadless areas.

Approximately 3,754 acres would be burned without any slashing or other pretreatment, generally in the spring, and generally using aerial (helicopter) ignition. Experience with this type of burn on the Cabinet District has shown that it can be done safely with a high degree of success. Burn intensities are highly dependent on fuel condition and load, and generally result in a patchy mosaic of varying burn intensities. Vegetation in burned areas generally responds rapidly resulting in a flush of palatable early successional vegetation.

Approximately 810 acres proposed for burning would require some pretreatment to meet resource objectives. Generally, this would involve use of chain saws to slash smaller trees in the immediate vicinity of larger ponderosa pine desired to be retained on site. These smaller trees, generally Douglas-fir less than eight inches in diameter, have low crown base heights that make them susceptible to initiating a crown fire and threatening the survival of the larger ponderosa pine. Slashing of these trees would occur on approximately 25% of the total area in proximity to the larger pine. None of the slashing would occur within any inventoried roadless area.

Burning would occur during either spring or fall when conditions allow for safe implementation of burning. More burning is likely to occur in spring when fuel moisture in more heavily forested areas is high and snow at higher elevations would control burn perimeters. Ignition would occur in drier, more open areas where fuels dry faster. Ignition would cease outside of riparian buffers and fire would be allowed to creep beyond that point but is not expected to go far. Prior experience with this approach has shown good success at meeting resource objectives without the added erosion risk of unnecessary fire line construction. Specific treatments and size of

each burn unit are shown in Table 2-12 below. Burn unit locations are shown in Figure 2-12 and are consistent between action alternatives.

**Table 2-12. Prescribed Fire for Reduction of Natural Fuels - Unit Summary  
All Action Alternatives**

Unit Number	Treatment	Acres
601	Burn	68
602	Burn	133
603	Burn	73
604	Slash/Burn	103
605	Slash/Burn	102
606	Burn	221
607	Burn	132
608	Burn	57
609	Burn	43
610	Slash/Burn	264
611	Burn	232
612	Burn	116
613	Burn	436
614	Slash/Burn	94
615	Burn	97
616	Burn	62
617	Slash/Burn	247
618	Burn	1930
619	Burn	154
Total		4564

## **Road Construction and Reconstruction**

Reconstruction of existing roads would be held to the minimum necessary to allow for the safe hauling of logs and to repair existing drainage and safety problems. This could include, but would not be limited to, removal of roadside vegetation, road widening, creation or widening of pull-offs, installation of culverts, rolling dips, application of surface aggregate, dust abatement, and blading of road surfaces.

All reconstructed or constructed roads that would be used by a mix of traffic users (both logging related traffic and recreationalist, for example) would be designed and constructed in compliance with the Highway Safety Act of 1966. This includes revised

authorities such as amendments No. 1 and 2 to the memorandum of understanding with the Federal Highway Administration (FSM 1535.11).

Any proposed permanent system roads would conform to the *Forest Service Standard Specifications for Construction of Roads and Minor Drainage Structures*. These specifications allow for contractual control over road construction. All new permanent system roads would be designed and constructed to accommodate the planned use safely and efficiently, while minimizing negative effects on the land and resources.

### **Proposed Road Maintenance**

To facilitate harvesting and associated activities, approximately 47 miles of existing NFS roads would be maintained or reconstructed to meet State Best Management Practice (BMP) standards, including replacement and installation of drain dips and culverts, constructing or cleaning catch-basins, blading, buttressing cut-slopes and fill-slopes, and/or resurfacing as needed on a site specific basis. This work is designed to reduce sediment sources, protect the road surface, and to allow for safe timber transport.

### **Proposed Road Management**

Roads that are opened to facilitate timber harvesting would be closed to the general public with a gate during operations. Following completion of activities, berms or other closure devices would be installed to restrict wheeled motorized travel on those road segments, including any newly constructed roads. See Appendix C for specific travel management information.

### **Administrative Changes to Road Status**

A number of impassable, non-system unclassified roads have been identified through the Travel Analysis Process as being unneeded for long-term forest management. These roads are currently stable with no sediment or resource concerns and are grown in with trees and other vegetation. These road segments have been field verified as having no hydrologic concerns such as sediment delivery to streams, potential for mass failure, ground water interception, or water routing to adjacent drainages. These roads would be administratively reclassified as decommissioned and consist of 49 segments totaling approximately 21 miles. No ground-disturbing actions would occur, so physical conditions would be unchanged. Access for hiking, etc. would remain unchanged. None of the roads in question are located in inventoried roadless areas. A list of these road segments is shown below in Table 2-13, while the locations of these roads are contained in Appendix C.

Table 2-13. Roads proposed for passive decommissioning

ROADS PROPOSED FOR PASSIVE DECOMMISSIONING				
ROAD#	MILES		ROAD#	MILES
14710	0.20		2159A	0.19
14711	1.11		2159B	0.14
14712	0.42		2710B	0.24
14713	0.55		2710C	0.41
14714	0.34		2710M	1.38
14715	0.18		2710P	0.85
14716	0.11		2710R	1.25
14717	0.12		2710S	0.94
149C	0.81		2710T	0.64
2111B	0.13		2710W	0.29
2111C	0.14		2710X	0.27
2111D	0.13		2751	1.29
2111E	0.21		2751A	0.16
2111F	0.12		2756	0.83
2111G	0.23		2756A	0.14
2111H	0.13		2756B	0.19
2111J	0.10		2756C	0.17
2113	1.79		2756D	0.14
2113A	0.47		2756E	0.12
2113B	0.75		2770A	0.30
2158	0.97		2770B	0.13
2158A	0.54		2770C	0.17
2158B	0.15		2770D	0.34
2158C	0.21		2770E	0.10
2159	0.43			

## Forest Plan Amendment for Management Area 12

The Forest Plan standard for open road density in MA12 (big game summer range) is 0.75 miles per square mile. As a result of a previous decision, the Pilgrim Project Area is divided into two areas for evaluating open road densities. The Stevens Ridge Amendment area encompasses roughly the south half of the project area, and Pilgrim Creek is roughly the northern boundary and Marten Creek the southern boundary. This standard was programmatically amended by a previous decision (Red Devil Timber Sale, Decision Notice, 1993) to allow open road densities in MA12 up to 1.46 mi/mi<sup>2</sup> during project activities. Currently, ORDs in this area are 1.24 mi/mi<sup>2</sup>. Elk populations are stable and near objectives; there is no indication that the open road

densities in MA12 are having observable adverse impacts on the elk population or the ability of the area to produce and maintain elk. A major consideration here is that areas classified as other than MA12 appear to be providing good quality summer habitat for big game, and much of the project area is comprised of inventoried roadless areas. Alternatives 2, 3, and 4 would require amending MA12 ORD standards if implemented. Please note that alternative 5 does not require this Forest Plan amendment.

### **Forest Plan Amendment for Management Area 10**

An amendment to allow removal of existing cavity habitat in MA 10 (big game winter range) would be required to fully implement Alternatives 2 and 4. Alternatives 3 and 5 would not require this amendment. This amendment would be needed to allow incidental removal of some snags within the cutting units. Occupational Safety and Health Administration (OSHA) regulations require snags that are hazardous to logging operations be felled to ensure the safety of forest workers. Therefore, we would anticipate the potential reduction in snags due to both safety concerns and harvest system logistics. This would reduce “cavity habitat” associated with snags in MA 10.

### **Design Features**

This project would meet regional and Kootenai National Forest Plan standards, guidelines, and policies designed to address resource management concerns. Project-specific design criteria will be developed and included in the decision document if selected, as summarized below:

- Best Management Practices (BMPs) would be implemented on timber haul roads, timber harvest units, and prescribed burn areas;
- All timber harvest units would be designed to retain Forest Plan standards for adequate levels of snags where available, replacement snags and coarse woody material to provide for cavity-associated wildlife species, small mammal habitat, and long-term soil productivity;
- Slash generated during harvest activities would be treated to reduce the risk of hazardous fire;
- Adequate coarse woody debris would be retained in harvest units to provide for long-term nutrient cycling;
- New road construction would be kept to the minimum required to treat forest stands;
- Riparian Habitat Conservation Areas (RHCAs, i.e. streamside) buffers would be delineated in all treatment areas;
- Noxious weed control measures, including equipment inspection and washing, and seeding of disturbed areas such as new roads and landings would be implemented through contract authorities to minimize the spread of weeds into treatment areas;
- Timing restrictions would be used as appropriate to minimize the potential for sediment delivery into streams during road work and harvest activities; and
- Portions of three Inventoried Roadless Areas (IRAs) are located within the Project Area and occupy a total of approximately 13,843 acres, or about 46% of the area. No timber harvest activities are proposed within these roadless areas. Prescribed burning is being proposed within portions of these IRAs. Burning will be conducted in a manner so as to

maintain their natural character and improve wildlife habitat. The integrity of inventoried roadless areas would be maintained.

- Portions of several historic trails included in units would be protected during project activities and restored following completion of harvest related activities.

## Additional Design Feature Details

During the design phase of the project various measures were incorporated into all action alternatives to lessen potential impacts and to avoid potential resource damage, and those described below apply to all three of the action alternatives. These aspects are detailed in the three action alternative descriptions below. Chapter 3 details these design criteria, and includes analyses of potential environmental impacts for each of the action alternatives.

### 1. Logging/mechanical treatment areas design criteria include:

#### • Cultural Resources:

For all units:

Contract provisions to protect cultural resources would be in place in the event there is a discovery at any point in implementation.

- **Inventoried Roadless Areas:** Harvest Units are located outside Inventoried Roadless Areas, preserving any options for future management. Prescribed burning would be conducted in such a manner as to preserve or improve roadless area characteristics. There would be no mechanical treatment in inventoried roadless areas associated with this project.

#### • Soils:

For tractor-yarded Units:

- a. Soil and Water Conservation Practices as identified in Forest Service Handbook 2509.22 would be applied to all timber harvest, road construction, reconstruction, post-harvest activity fuel treatments, and road decommissioning projects. BMPs, the *INFS*, and *Kootenai National Forest Riparian Area Guidelines*.
- b. Ground-based yarding, processing, and harvester equipment will generally operate on slopes under 35%.
- c. All new skid trails will be agreed upon and designated on the ground by the purchaser and the Forest Service before felling begins.
- d. Main skid trail spacing will be 75 feet or greater on ground skid units, except where the trails converge to landings and as terrain dictates otherwise. All other trails will be spaced at maximum reaching distances.
- e. Post-harvest, all main skid trails will be either covered using randomly placed logs (on contour) to reduce run-off, stabilized with water-bars, or a combination thereof.

- f. Operating equipment will avoid moist or wet depression areas unless properly protected by snow or frozen conditions.
- g. Coarse down woody would be scattered throughout harvest units as required by the silvicultural prescriptions.

For skyline-yarded Units:

- a. The leading end of logs will be suspended during skyline yarding.
- b. Feller-bunchers used for falling in skyline units will operate on slopes less than 50% and move/operate only straight up and down the fall line.

**• Soil productivity and nutrient cycling:**

Large down-woody material for soil productivity and nutrient recycling will be maintained by the following:

- a. Down woody retention levels would be maintained to meet the following objectives; in moist forest habitat treatment areas, Graham et al. (1994) recommends retaining 15-30 tons/acre of down woody material greater than 3 inches in diameter; in drier habitat types the recommended retention level is 10-20 tons/acre of down woody material greater than 3 inches in diameter.
- b. Prescribed underburning would generally take place in the spring and pile burning in the fall during periods of relatively high soil moisture.

**• Scenic and Visual Quality:**

- a. Created openings and treatment areas should not be symmetrical in shape.
- b. Created openings should resemble the size and shape of those found in the surrounding natural landscape.
- c. Along roadways, vary unit sizes, widths, shapes and distance from the center line.
- d. Edges will be shaped and/or feathered to avoid a shadowing effect in the cut unit.
- e. Where compatible with stand management objectives, leave a diversity of species and age classes.
- f. Where feasible, retain screening trees one tree-height below roads and landings when viewed from below. Avoid creating a straight edge of trees by saving clumps of trees and single trees with varied spacing.
- g. Minimize the number of skyline corridors in visually sensitive areas.

- **Noxious weed control**

Equipment used for logging and road construction/reconstruction would be required to be pressure-washed prior to being allowed in the project area. Timber sale contract provisions for washing equipment for noxious weed control purposes would be used.

Timber Sale contract provisions that require the purchaser to pre-treat haul routes with herbicides to remove seed-bearing noxious weeds would be included in the timber sale contract also. Any treatment would be conducted in accordance with and under the authority of the Kootenai National Forest Invasive Plant Management EIS (2007).

- **Snag Resource**

All treated areas, in all management areas treated, would meet or exceed Forest Plan standards for snag retention (minimum of one snag/acre). One to two snags per acre and 2-4 live tree snag replacements will be retained, for a total of 3-6 per acre. Standing dead ponderosa pine and western larch would be left standing in harvest units unless they present a safety hazard. Any snags felled for safety purposes would be left on site.

- **Wildlife**

- a. Activities in Units 20, 21, 21A, 21B, 23, and 23B would have no activities during the spring elk calving season (5/1-7/15) to maintain habitat security during this important time period, based on on-site evaluation of proposed units by the Team wildlife biologist.
- b. The proposed action includes 3754 acres of natural fuels burning of which 530 acres is in designated old growth. Nine acres of the designated old growth in action alternatives is proposed for understory slashing prior to burning. These prescribed burns would be conducted under spring or fall conditions when soil moisture is high with the objective of reducing surface fuels and understory species (ladder fuels) to increase forage production, to ensure that old growth specific objectives are met. Monitoring (project file) of past projects indicates prescribed fire, and slashing followed with prescribed fire, are valid treatments to protect and enhance old growth characteristics.
- c. All newly constructed and currently restricted roads opened for timber haul would have restrictions for public motorized access to minimize impacts to big-game habitat effectiveness. Gates would be installed with the road construction and reconstruction in the timber sale contracts. Following harvest activities, roads would be restricted to meet motorized route density standards, and motorized access would return to pre-project conditions. While the intent of these measures is to minimize impacts to big game habitat effectiveness, where opportunities exist to provide short-term access for public firewood gathering they will be considered. Roads may be opened for short periods of time (approximately one

month) outside of big game hunting seasons. Any old growth areas or important wildlife snags will be off-limits to firewood gathering and signed or marked accordingly.

- d. Snags and/or live tree snag replacements would be retained where opportunities exist in treatment units, as needed to meet Forest Plan standards and guidelines. The location of temporary roads, skid trails and yarding corridors will ensure whenever possible, that desirable trees and snags would not be removed during operations. The sale administrator will ensure, whenever possible, that the design of skid trails and cable corridors avoid these desirable trees and snags. Large diameter snags (greater than 16 inches dbh) that are felled for safety reasons would remain on site to provide for large woody debris recruitment and long-term site productivity. High hazard snags and snags in the advanced stages of decay would not be used to meet retention objectives. Retention practices would focus on ponderosa pine, western larch, and Douglas-fir trees, especially older and larger ponderosa pine and western larch trees.
- e. Where grapple piling is prescribed for post-harvest fuels reduction, leave an occasional slash pile (i.e. 1 per 3 acres) where deemed appropriate by the District Wildlife Biologist, to provide habitat for small forest animals (e.g. snowshoe hares), while still meeting fuels objectives.
- f. Research is divided on the effects of vegetation management within the nest stand of goshawks. Some studies have shown that modification of nest stands has minimal impact on reoccupancy and productivity of resident goshawks (Penteriani and Faivre 2001, Penteriani et al. 2002, Mahon and Doyle 2005, and Moser and Garton 2009). While other studies have found that vegetation management within the nest stand has a negative impact on reoccupancy and productivity of resident goshawks (Crocker and Bedford 1990 and Patla 2005).

In response to these conflicting findings, under Alternative 3 a buffer of 40 acres was placed around the known goshawk nest and unit 5 was reduced in size from 46 acres to 14. So long as the nest area is considered active (for 5 years after the last documented use of the nest), no ground disturbing activities will occur within the 40 acre buffer area. Additionally, a timing restriction is in place for the 425 acre post-fledging area, no ground disturbing activities would take place between April 15 and August 15. Alternatives 2 and 4 do not include a buffer around the nest or a timing restriction on activities. Alternative 5 does not include unit 5, but does include the timing restriction.

#### • All listed species in the Biological Evaluation

If any threatened, endangered, or sensitive species are located during project implementation, management activities would be altered, if necessary, so that proper protection measures can take place. Timber sale contract provisions that require the protection of Threatened, Endangered and Sensitive Species would be included in the timber sale contract.

The wildlife biological evaluation for this project included the following conservation requirements and/or recommendations, which would be incorporated into project implementation:

- a. Wildlife Tree Retention: See above.
- b. Maintain Stand Structure and Habitat for Snag-dependent species: No old-growth stands are proposed for harvest. The tree marking guide would assure a diversity of snag structure classes and the highest probability of long-term retention.
- c. Retention of Hardwood Trees: To maintain forest species diversity and wildlife habitat, aspen and birch trees would not be harvested. If trees of these species needed to be cut for safety reasons, they would remain on site for coarse-woody debris and long-term site productivity.
- d. Slash Piles: See above.
- e. Prescribed burns: Helicopter pilots and burn bosses will be briefed prior to ignition regarding peregrine falcon nest locations and a route will be identified that avoids known nests.
- f. Botany: Surveys have been conducted for plants of concern. However, if a population or individual is located during any phase of implementation special avoidance provisions in the contract would be invoked to ensure protection.

### • Fisheries and Aquatics

Riparian buffers required by the Inland Native Fish Strategy (INFS) are amended to the Forest Plan in 1995, and these guidelines would be followed under all action alternatives. These are described in detail in the Fisheries analysis in Chapter 3.

Buffer zones for streams, wetlands and other riparian habitat have been included in and adjacent to harvest units as designed by the project fish biologist, hydrologist, botanist and soil scientist utilizing INFS standards and other site-specific recommendations (including BMPs). Treatment area boundaries have been identified to exclude the RHCA (there are no activity units that overlay RHCA areas). RHCA widths are as follows:

- a. Fish Bearing Perennial Streams - 300 feet from the edge of both stream channel banks.
- b. Non Fish Bearing Perennial Streams – 150 feet from the edge of both stream channel banks;
- c. Ponds, Lakes, Reservoirs, Wetlands greater than 1 acre – 150 feet from the edge of the riparian vegetation or seasonally saturated soil;
- d. Seasonally flowing or intermittent streams and wetlands less than 1 acre – 50 feet slope distance.

To minimize potential sediment delivery to fish habitat, road work in live channels would require mitigation measures to minimize potential sediment delivery to fish habitat. This would include limiting work to the July 15<sup>th</sup> to September 1<sup>st</sup> construction window or when channels are dry.

## Monitoring for All Action Alternatives

Information gathered before, during, and after implementation of activities is used to determine the effectiveness of the project's design. This establishes a feedback mechanism so management can develop and employ an adaptive learning curve. Monitoring is done at recurring intervals as a basis for Forest Plan implementation. Project effectiveness monitoring is done by sampling specific projects at specified time intervals. The activities associated with this proposed action would include monitoring of the following:

- ☐ Timber sale preparation monitoring will be conducted before the award of the timber sale. This includes field checking of timber harvest unit layout and marking by timber management staff, hydrologist, wildlife biologist, archeologist, and silviculturist prior to implementation to assure the intent of the timber sale design and designated riparian buffers are realized.
- ☐ Timber sale contract activities will be monitored throughout the timber sale process to ensure compliance with the timber sale contract, Forest Plan standards and guidelines, existing laws and regulations, and identified design features. Timber management staff will conduct monitoring assisted by wildlife biologist, hydrologist, archeologist, and soil scientist.
- ☐ Forest soils scientist, hydrologist, and/or timber management staff will use soil disturbance transect information and walk-through surveys to monitor during and after timber sale activity.
- ☐ Monitor sites of soil disturbance (landings, skyline corridors, skid trails, bladed constructed, re-constructed, and obliterated road segments) for 3 years to provide for early detection and treatment of any weed infestations that may result from project activities.
- ☐ monitoring of needs and results of fuel hazard reduction, fuel consumption, and site preparation for burning projects. Walk-through surveys will be conducted. Plot information and data may be collected on a sample basis. Fuels management staff will conduct the monitoring.
- ☐ Silviculture staff will monitor reforestation success.
- ☐ Number, size, distribution, and quality of snags and down logs will be field checked by wildlife staff on a sample of harvest units to determine if dead wood habitat objectives are being met.
- ☐ Implementation and effectiveness monitoring of Water Quality Best Management Practices as follows:

**Objectives:** Monitor implementation of project BMPs (Appendix D) and design features, Forest Plan standards and guidelines, including INFS, and other water quality-related requirements designated in planning and contract documents.

- Practices Evaluation Program User's guide (Draft National Direction, May 2005) and previously used on the Kootenai National Forest.

- Timber sale BMPs include: designation of stream courses on sale area maps and protection as described in Appendix D; skid trails and landings (location, design, and erosion control); suspended yarding; and, timber sale administration.
- Road BMPs include: pre- and post-haul maintenance; road surface treatments; drainage, location and timing of construction; erosion control; wet-weather use; and decommissioning unauthorized and previously decommissioned roads.

**Analysis and Reporting:** Maintain annual records of BMP implementation and effectiveness by activity and practice. BMP monitoring is reported regularly as part of Forest Plan monitoring.

**Schedule:** Begin in fall 2013 through duration of project, approximately 2016, with post-activity effectiveness monitoring on selected sites.

**Personnel Responsible:** Watershed specialists, sale administrators, and technicians (road, fuel, wildlife, and hydrology).

Determine the extent to which practices are effective in protecting water quality. Document level of implementation and effectiveness (full, partial, not implemented). Evaluate impacts to water quality (full/partial protection, risk/type of impairment) and measures taken to offset or mitigate effects.

**Activities:** Harvest and related activities including: tractor and skyline logging systems, road activities (pre and post-haul maintenance, use, mitigation), site preparation for planting, fuels treatments, and related activities (include transport and storage of potentially hazardous materials).

Monitor effectiveness of erosion control structures and success of seeding on hand and mechanical fire-lines and landings/staging areas, and monitoring activities to address cumulative watershed effects. In addition, ongoing monitoring of channel and water quality will continue. These activities are tracked and summarized as part of the Forest Plan annual monitoring programs.

**Timber harvest treatment effectiveness:** Monitoring for activity results would take place on all proposed treatment units (post-harvest exams) to ensure that project and silvicultural objectives have been met.

**Soil compaction:** The effectiveness of prescribed Best Management Practices (BMPs) to redistribute slash over skid trails to help prevent erosion would be monitored by agency soils and hydrology personnel by use of randomly placed transects.

**Down Woody Debris:** During contract administration the amount of woody debris left in the mechanical treatment units will meet recommended minimum levels while also being consistent with fuels reduction objectives. Accomplishment of this objective would be monitored by timber, fuels, or soils personnel.

**Cultural resources:** Cultural resource surveys for this project have been completed. The action alternatives were designed for protection of sites discovered during

implementation, and protect treaty rights. These concerns will be addressed through ongoing consultation with tribal representatives. Timber Sale Contract Special Provision B6.24#, Protection of Cultural Resources, will be included in any timber sale contract. It specifies that the Forest Service may modify or cancel the contract to protect cultural resources based on monitoring results, regardless of when they were identified.

**Noxious Weeds:** Monitoring by district personnel (noxious weed program manager, botanist, and others) for noxious weed occurrence within the project area would continue during and after project implementation. Any newly discovered noxious weeds would be treated as funding becomes available.

**Sensitive plants:** Monitoring by district personnel (botanist) for sensitive plant occurrence within the project area would continue during and after project implementation. Any newly discovered sensitive species individual or group would be avoided or otherwise protected, as allowed by use of specific contract provisions.

## Timing of Proposed Activities

The proposed action would be accomplished in part using private contractors. As with all contracted projects, associated activities occur in a certain order and completion of any given project may require 5-7 years from the time a contract is awarded. In order for harvest and fuel reduction treatments to be performed, the first items to be accomplished with this project would include all required road maintenance, temporary road construction, and road reconditioning activities. When road work is completed, timber removal can begin. Harvesting schedules for different units may depend on contractor needs or design features developed as part of the project. However, as harvest is completed within each unit slash clean-up and additional fuels reduction work would occur based upon the specific prescription developed for each unit.

## Forest Plan Management Areas

Table 2-14. Proposed harvest acres by MA, all alternatives

MA	Alt. 2	Alt. 3	Alt. 4	Alt. 5
10	15	0	6	0
11	79	43	91	3
12	1317	1391	1193	629

Proposed harvest by management area is shown in Table 2-14. All proposed harvest is in management areas 10, 11, or 12. There is no harvest proposed in designated old growth.

**Table 2-15. Proposed prescribed burning acres by MA**

MA	Alts 2, 3, 4 and 5
Old Growth (13, 10OG, 18OG, 19OG, 24OG)	530
5	18
10	2634
11	115
12	903
18	229
19	127
24	9

Prescribed burning proposed for this project does not differ by action alternative. Table 2-15 displays acreage proposed for ignition in each alternative.

## Alternative Comparison

The following table summarizes and contrasts the proposed action with the no action alternative, facilitating a clear comparison by the deciding officer and the public. Potential actions and outputs each have associated consequences. Chapter 3 discusses each environmental consequence in detail.

**Table 2-16. Comparison of Alternatives**

<b>Metric</b>	<b>Alt. 1 No Action</b>	<b>Alt. 2 Proposed Action</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<i>Total acres of timber harvest</i>	0	1,411	1,434	1,292	632
<i>Acres of regeneration harvest</i>	0	587	925	813	261
<i>Acres of intermediate harvest</i>	0	824	593	479	371
<i>Acres of ground-based harvest</i>	0	431	568	550	249
<i>Acres of skyline harvest</i>	0	980	948	740	383

<b>Metric</b>	<b>Alt. 1 No Action</b>	<b>Alt. 2 Proposed Action</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<i>Miles of new permanent road construction</i>	0	2.4	4.7	0	0
<i>Miles of temporary road</i>	0	1.6	1.6	0	0
<i>Miles of road reconditioning (BMPs)</i>	0	47	47	47	47
<i>Does this alternative address the purpose and need?</i>	No	Yes	Yes	Yes	Yes
<i>How many acres would be planted to desirable tree species (those more resistant to fire, insects and diseases)?</i>	0	311 required, up to 211 additional acres for diversity as funding allows.	337 required, up to 368 additional acres for diversity as funding allows.	383 required, up to 208 additional acres for diversity as funding allows.	122 required, up to 59 additional acres for diversity as funding allows
<i>How many acres would be treated using prescribed fire to enhance decadent big game forage areas?</i>	0	4,564	4,564	4,564	4,564
<i>Cover:Forage ratio, Summer Range (Guide 60:40)</i>	79:21	76:24	75:25	76:24	78:22
<i>Cover:Forage ratio, Winter Range (Guide 60:40)</i>	73:27	72:28	72:28	72:28	73:27
<i>How many acres of lodgepole pine are treated to address bark beetle mortality?</i>	0	276 acres	588 acres	430 acres	139 acres

<i>Metric</i>	<i>Alt. 1 No Action</i>	<i>Alt. 2 Proposed Action</i>	<i>Alt. 3</i>	<i>Alt. 4</i>	<i>Alt. 5</i>
<i>Total employment (persons) as a result of implementation</i>	0	120	148	131	51
<i>Present net value, timber harvest and required design criteria</i>	\$0	-\$553,633	-\$356,884	\$56,822	-\$289,444
<i>Present net value, timber harvest and other planned activities</i>	\$0	-\$735,755	-\$539,006	-\$238,944	-\$471,566